

A Class Act: The Classification System

Grade Level: Fifth Grade

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Length of Unit: Twelve Lessons

I. ABSTRACT

This unit is designed to allow students to investigate as well as understand the animal classification system. The unique aspect of this unit is that as they learn more about each level in the classification system they create a parallel system which begins with the school and ends with the individual students. Students create their own scientific names based on the traits they have used as keys to their own classification. The students transfer this knowledge to the scientific classification system and the unit ends with the development of two guide books: one based on the individual students and their classification and the second is a study of local animals.

II. OVERVIEW

A. Core Knowledge Content

1. Classifying Living Things

- a. Scientists have divided living things into larger groups known as Kingdoms: Plant, Animal, Fungus, Protist, & Moneran.
- b. Each Kingdom is divided into smaller groupings: Kingdom, Phylum, Class, Order, Family, Genus, Species, (Variety).
- c. When classifying living things scientist use special names made up of Latin words.
- d. Different classes of vertebrates and major characteristics; fish, amphibians, reptiles, birds, & mammals.
- e. Examples of how an animal is classified.

B. Unit Concepts

1. Understand that systems are a collection of structures and processes that interact.
2. Develop an appreciation of the structures and functions of living systems.
3. Observe and recognize the characteristics of an organism.
4. Understand the sequential order and classification data.
5. Develop an understanding about scientific inquiry.

C. Skill Concepts

1. Categorize and classify according to similarities and differences.
2. Distinguish characteristics and traits.
3. Utilize the sequence of the classification system to understand an animal's structure.
4. Describe the structures and processes that are found in the classification system.

5. Solve problems by observing, analyzing, using deduction & logical thinking then drawing conclusions.
6. Use research abilities in reading and writing.

III. **BACKGROUND KNOWLEDGE**

A. For Teachers:

1. What Your Fifth Grader Needs to Know, Hirsch, Dell Publishing, 1993.
2. Everything You Need to Know About Science Homework, Zeman & Kelly, Scholastic Reference, 1994.
3. Mr. Biology's Bio Web Site; www.hiline.net/~siremba/html

B. For Students:

1. Special classification of animals in first grade.
2. The five Classes of animals from third grade.
3. Living organisms and cellular structure from fifth grade.

IV. **RESOURCES**

- A. What Your Fifth Grader Needs to Know, Hirsch, Dell Publishing, 1993.
- B. Everything You Need to Know About Science Homework, Zeman & Kelly, Scholastic Reference, 1994.
- C. What's the Difference? The Classification Key Toolkit - Vertebrates, Inbal & Susskind, Tom Snyder Productions, 1991.
- D. Classification; Reproducible Pages, Bouffard, Milliken Publishing Co., 1985.
- E. The Animal Kingdom, Batiza, McDonald Publishing Co., 1984.
- D. Mr. Biology's Bio Web Site; www.hiline.net/~siremba/html
- E. Tree of Life; <http://phlogen.arizona.edu/tree/phlogeny.html>
- F. Diversity of Life; www.geocities.com/RainForest/6243/diversity.html

V. **DAILY LESSON PLANS**

Lesson 1: What is Classification ?

A. Objectives

1. Content
 - a. Categorization, classification
2. Concept Objectives
 - a. Understand that systems are a collection of structures and processes that interact.
3. Skill Objectives
 - a. Categorize and classify according to an similarities and differences.
 - b. Distinguish characteristics and traits.

B. Materials

1. Learning logs or notebooks (These will be used for all lessons & not restated)
2. Ten items from students desks
3. Appendix A (Homework sheet)

C. Vocabulary

1. Classification - a system of grouping things by similarities.

D. Procedures

1. Have students take ten items out of their desks. Direct them to make three groups and label (be able to tell) them. Allow 7 to 10 minutes. Lead discussion and sharing with questions such as; "Why did you do what you did ?"
"What did each group have in common ?"
2. Have the students use the same items and regroup again but differently than before. Repeat discussion.
3. Explain that they "classified". (Define 'classification' and put in notes) classifying is a system of grouping things which are alike in some way. There are many ways to classify objects and there is no perfect system.
4. Discuss that we will be learning how scientists have classified all living things on Earth.
5. Assignment: Look around your home, neighborhood or city and think of two places or times when things are classified . Show examples in classroom; homework bins, bookcases, lockers, etc. Give Homework sheet. (Appendix A).

E. Evaluation/Assessment

1. Monitor grouping of objects

Lesson 2.1: Why Do We Group Things? (part one)

A. Objectives

1. Content
 - a. Characteristics & traits
 - b. Similarities & differences
 - c. Linnaean system
2. Concept Objectives
 - a. Develop an appreciation of the structures and functions of living systems.
3. Skill Objectives
 - a. Categorize and classify according to similarities and differences.
 - b. Distinguish characteristics and traits.

B. Materials

1. Appendix A (Homework sheet)

C. Vocabulary:

1. Review Organism: living thing
2. Appearance: the outward look of a thing
3. Characteristic, special feature or quality structure; the arrangement of parts that form an organism
4. External : having to do with the outside
5. Internal: having to do with the inside
6. Trait: a special feature or ability

D. Procedures

1. Discuss findings from homework. For example in library: if there was no organization or classification you may never find the book you wanted,

Ask the students to describe classification in grocery stores.

2. Explain that scientists group things in order to study them. There are over 1,500,000 living organisms. With that amount you must classify in order to find or study them.

3. Introduce and discuss vocabulary. Add to notebook.

4. In notebook or learning log have students respond to the lesson question "Why do we classify things ?

E. Evaluation/Assessment

1. Class participation

2. Collect responses and review for understanding.

3. Homework completion (Appendix A)

Lesson 2.2 Who Classifies Living Things ? (continued)

A. Objectives

See 2.1

B. Materials

1. Appendix B (History of Classification)

C. Vocabulary:

1. Biologists: study living organisms. They determine characteristics.

2. System biologists: uncover how living organisms are related.

3. Taxonomists: name organisms and place them in groups.

D. Procedures

1. Read and discuss History of Classification (Appendix B)

2. Discuss vocabulary and add to your notebook. Be sure to refer to Greek and Latin basis for each word.

E. Evaluation/Assessment

1. Class participation

Lesson 3: How are 'All' Living Things Classified ?

A. Objectives

1. Content

a. Classification

b. Kingdoms & characteristics

c. Similarities & differences

2. Concept Objectives

a. Understand that systems are a collection of structures and processes that interact.

b. Observe and recognize the characteristics of an organism.

3. Skill Objectives

a. Categorize and classify according to similarities and differences.

b. Distinguish characteristics and traits.

c. Solve problems by observing, analyzing, using deduction & logical thinking then drawing conclusions.

B. Materials

1. Appendix C (Similarities & differences)

C. Vocabulary:

1. nutrients - food, things that promote growth.
2. Kingdoms- the most general of the seven groups in the classification system.

D. Procedures

1. Students complete similarities and differences skill sheet (Appendix C)
2. Explain that scientists begin to classify all living things by looking at three things and how they are alike or different.
 - a. the organism's cellular structure
 - b. the way that the organism gets nutrients and energy
 - c. the way an organism reproduces
3. Scientists found that they can put living things into 5 large groups called Kingdoms. (*Note: Current discoveries may have resulted in new kingdoms beyond the primary five. Discuss this fact but that for our class purposes and knowledge at large we will use these five.)

E. Evaluation/Assessment

1. Class participation
2. Appendix C (Similarities & differences skill sheet)

Lesson 4: What Are the Kingdoms and Why ?

A. Objectives

1. Content
 - a. The five kingdoms
 - b. Characteristics & traits
2. Concept Objectives
 - a. Understand that systems are a collection of structures and processes that interact.
 - b. Develop an appreciation of the structures and functions of living systems.
 - c. Observe and recognize the characteristics of an organism.
3. Skill Objectives
 - a. Categorize and classify according to similarities and differences.
 - b. Distinguish characteristics and traits.
 - c. Solve problems by observing, analyzing, using deduction & logical thinking then drawing conclusions.

B. Materials

1. Overhead of Appendix D (The five kingdoms)
2. Class size matrix (Appendix E)
3. Student copies of matrix (Appendix E)
4. Soft throwable object (i.e. Nerf Ball, Koosh Ball)

C. Vocabulary:

1. Moneran - see in procedures
2. Protist - see in procedures
3. Fungus - see in procedures

D. Procedures

1. Kingdoms are the most general and biggest grouping of organisms. We will look at each kingdom and what organisms are found there. We will label and identify why they are in this kingdom or what they have in common.

2. Use an overhead, (Appendix D) class size matrix of Appendix E and individual handout for students (Appendix E). Explain that they will be expected to identify and label each kingdom on a quiz.

3. Have students locate known kingdoms first (animal or plant) Label & discuss each and their characteristics. Refer to lesson 4 and three areas of traits and commonalities.

- a. Animal - cells have a nucleus, many-celled, must eat other organisms for energy, reproduced from eggs.
- b. Plant - cells have a nucleus, one or many celled, use sunlight for energy, most reproduce from seeds.
- c. Fungi (molds, yeast, mushrooms) - cells have a nucleus, one or many celled, make a chemical that digests the surface that they are on then they eat the digested material, reproduce by spores.
- d. Protista (paramecium, euglena, amoeba) - cells have nucleus, most are one celled organisms, eat other organisms for energy, reproduce by dividing or budding.
- e. Moneran (bacteria) - cells do not have a nucleus, they are one celled organisms, they take nutrients from outside their bodies, they reproduce by dividing.

E. Evaluation/Assessment

1. Class participation

2. Play Hot Potato review. Use soft tossable object or ball. All students stand up and toss the ball to different students and name one of the five Kingdoms. If they answer correctly, they stay standing. If they answer incorrectly or take too much time, they sit down. Return the object to teacher after each try. Start new round after the five Kingdoms are identified. Continue until a few are standing and reward.

Lesson 5: Kingdoms are Really Big. Can We Get Smaller ?

A. Objectives

1. Content

- a. The seven groups in the classification system.
- b. Mnemonic devices

2. Concept Objectives

- a. Understand that systems are a collection of structures and processes that interact.
- b. Understand the sequential order and classification data.

3. Skill Objectives

- a. Utilize the sequence of the classification system to understand an

animal's structure.

b. Describe the structures and processes that are found in the classification system.

B. Materials

1. Appendix D

2. Chart paper

C. Vocabulary:

1. Phylum (phyla-plural), Class, Order, Family, Genus, Species

D. Procedures

1. Review Kingdoms and give quiz. (Appendix D)

2. Tell students that the Linnaean system involves seven groupings or subdivisions.

Each level shares common traits and characteristics. Each level gets more specific in details and contains less organisms until you have a singular creature.

3. Write the sequence on a chart as follows: Kingdom, Phylum, Class, Order, Family, Genus, Species.

4. Students must memorize this sequence for a test. Discuss mnemonic devices and share this one with the class; King Phillip Came Over For Great Spaghetti. Write out and connect first letter with first letter in classification sequence.

5. Invite students to create their own mnemonic device and share.

6. Play Hot Potato review with the classification system.

E. Evaluation/Assessment

1. Class participation

2. Grade quiz on five kingdoms (Appendix D)

Lesson 7 : What is a Phylum ?

A. Objectives

1. Content

a. Phyla of animals: vertebrate & invertebrate

2. Concept Objectives

a. Develop an appreciation of the structures and functions of living systems.

b. Observe and recognize the characteristics of an organism.

3. Skill Objectives

a. Utilize the sequence of the classification system to understand an animal's structure.

b. Describe the structures and processes that are found in the classification system.

Materials

1. Large class chart of Human taxonomy (Appendix J)

2. Appendix F; Vertebrate or Not ?

C. Vocabulary:

1. Vertebrates; see later in procedures
2. Invertebrates; see later in procedures

D. Procedures

1. Review Classification system with quick 5 minute Hot Potato Review. Have students write down the classification system in sequence on piece of paper. Collect.
2. We will look at only the animal kingdom for this study because there are just too many creatures out there.
3. As you go down the classification system you narrow the traits & number of organisms in them.
4. In Animal Kingdom there are two main branches: vertebrate and invertebrate. Begin large chart to chart humans. Write words on chart.
5. Ask if these words are familiar and gather student information.
6. Vertebrates are animals with backbones. Feel along your spine. You are feeling bones called vertebrates. So animals that have a backbone (spine) are called Vertebrates. They usually have a skeleton hidden inside of their bodies. Label on chart and put notes in note book.
7. Write Invertebrate on board ask students to look at difference in word. Note the prefix in-. Ask what this prefix means and then apply it to the word in. Label definition on chart. Not having vertebrae or backbone (spine). These creatures have no backbone.
8. Complete the activity sheet Appendix F. Collect and grade.

E. Evaluation/Assessment

1. Class participation
2. Appendix F, (Vertebrate or Not ?).

Lesson 8: What are Vertebrates ? What are its Classes ?

A. Objectives

1. Content
 - a. The five classes of vertebrates, mammals, reptiles, fish, birds, and amphibians.
2. Concept Objectives
 - a. Observe and recognize the characteristics of an organism.
 - b. Understand the sequential order and classification data.
3. Skill Objectives
 - a. Categorize and classify according to similarities and differences.
 - b. Distinguish characteristics and traits.
 - c. Utilize the sequence of the classification system to understand an animal's structure.
 - d. Describe the structures and processes that are found in the classification system.

B. Materials

1. Class classification chart (Appendix G)
2. Large class chart of Human taxonomy (Appendix J)
3. Class Matrix ; chart or overhead (Appendix H)
4. Student copy of matrix (Appendix H)
5. Activity sheet (Appendix I)

C. Vocabulary:

1. Appendages - limbs used for movement such as arms, & legs.
2. Warm-blooded - body temperature is regular and not affected by outside conditions.
3. Cold-blooded - body temperature is regulated by surrounding temperature.

D. Procedures

1. Begin the Class Classification chart (see Appendix G)
2. Look back to the classification overhead or poster chart. We are going to just work with the phylum of vertebrates from this point on.
3. The Phylum of vertebrates is divided into five classes based on how they are born, type of body covering, habitat, warm/cold-blooded and types & number of appendages.
4. Remind students that they have studied this before. Most likely in third grade.
5. Create and complete a matrix (class and student). (Appendix H)
 - a. Mammals: warm-blooded; that live on land, have hair, born alive, feed their young milk, and have two pairs of appendages.
 - b. Reptiles: cold-blooded, live on land, have scales, hatched from eggs, have two pairs of appendages (explain that snakes have remains of appendages in their skeleton but they do not develop)
 - c. Amphibians - cold-blooded, live water (when young) then live on land, smooth moist skin, hatched from eggs, have two pairs of appendages
 - d. Birds - warm blooded, live on land & air, have feathers, hatch from eggs, have two pairs of appendages (legs & wings)
 - e. Fish - cold-blooded, live in water, covered with scales, most hatched from eggs, two pairs of appendages (fins & tail)
6. Review the matrix and discuss any questions or generalizations.
7. Hold up picture cards or call out names of familiar animals and ask the students to determine what class they are in and why. (Approximately 5 minutes)
8. Using the matrix complete the activity sheet; Appendix I. Students identify the class that each animal belongs to.

E. Evaluation/Assessment

1. Class participation
2. The activity sheet for a grade (Appendix I)

Lesson 9: What's Next ?

A. Objectives

1. Content
 - a. Classification system

- b. Taxonomy of humans & other animals
- 2. Concept Objectives
 - a. Understand that systems are a collection of structures and processes that interact.
 - b. Observe and recognize the characteristics of an organism.
 - c. Understand the sequential order and classification data.
- 3. Skill Objectives
 - a. Distinguish characteristics and traits.
 - b. Categorize and classify according to similarities and differences.
 - c. Utilize the sequence of the classification system to understand an animal's structure.
 - d. Describe the structures and processes that are found in the classification system.

B. Materials

- 1. Class Classification chart (Appendix G)
- 2. Overhead of Appendix J (Human taxonomy)
- 3. Overhead of Appendix G

C. Vocabulary:

D. Procedures

- 1. Review Classes by going over the activity sheet (Appendix I).
- 2. Look at Class Classification chart (Appendix G).
- 3. Add Class: take your grade level and break into the classes at this level. Add to this chart with explanation.
- 4. Review the rest of the classification system.
- 5. Use Appendix K as an overhead and go over human taxonomy levels and traits. Discuss the traits at each level.
- 6. Keep overhead out. Get class classification chart and explain that we are going to classify everybody in our class so that eventually each person is an individual species. We will use different traits to continually regroup into smaller and more specific groups.
- 7. Compare your chart (Appendix G) to the human chart (Appendix J) to the class level.
- 8. Ask class to now move to the Order level. We will need to find a trait that would divide our class into at least two groups. Guide them to choose obvious but clear (such as birth year not short or tall) traits in which to regroup.
- 9. Physically regroup the class by the trait. and mark the Orders, the characteristics and members that regrouped as well as the students names. (see Appendix J).
- 10. You are now going to create Families. Each Order group will now find a characteristic that will allow the group to change into at least two new groups.
- 11. Mark on chart (put characteristics and students names) and physically regroup students.
- 12. Continue with the process and regroup to Genus. Mark on chart and

physically regroup. Sometimes a student will be in a group by themselves at this point. This is fine, just have them determine a species characteristic in the next step.

13. Continue with the process and regroup to species. Mark on chart and physically regroup. At this point every student should be in a group by themselves.

14. Discuss the process and how characteristics became more specific and the number of members became less.

15. Next we will look at how scientists use this taxonomy to give scientific names to organisms. We will give ourselves scientific names.

E. Evaluation/Assessment

1. Class participation
2. Regrouping of students

Lesson 10: What's in a Name ?

A. Objectives

1. Content
 - a. Classification system
 - b. Scientific names
2. Concept Objectives
 - a. Understand that systems are a collection of structures and processes that interact.
 - b. Observe and recognize the characteristics of an organism.
3. Skill Objectives
 - a. Categorize and classify according to similarities and differences.
 - b. Utilize the sequence of the classification system to understand an animal's structure.

B. Materials

1. Class classification chart (Appendix G)
2. Overhead of Appendix J and G.

C. Vocabulary

1. Scientific Names: The name given by taxonomists that is made up of an organisms Genus species name. The First part (Genus) is capitalized and the second part (species) is not.

D. Procedures

1. Ask students to draw or describe the animal that you will write on the board. Ask students to be as specific as possible. Write the word wild cat. Allow about 5 minutes. Share the students concepts. There should be a variety from tigers, lions, to small neighborhood cats. Explain that with so many different thoughts it is hard to be exact. Scientist had to be exact so if talking across the world ; their cat was the same cat that the other scientist was thinking about.
2. Scientists developed a system called taxonomy to name things. It uses the classification system to develop a scientific name. So an animal may have a common (or everyday name) that may change depending on where you live, but it

also has a specific scientific name that stays the same across the world.

3. Explain that a scientific name is the Genus/species of an organism.

(Use the bottom of Appendix J & G as overheads.)

4. The scientific name is derived from Latin and usually reflects a characteristic of the creature.

5. The first letter of the Genus name is capitalized, the first letter of the species name is not capitalized. Both names should be underlined or written in italics.

6. Give examples: *Homo sapiens* (human) intelligent man. *Panthera tigris* Large cat with stripes. (Page 24 from Miliken's Classification is good to use at this point.)

7. Give a wide variety of different animals to get the mood of the Latin sound in the words. Ask students to create their own scientific name (Genus/ species) for our class chart. Give some examples: *Big Redicus blue eyesum*; *Soccerium pizzadae*; *Twelvis pepsiera*.

8. Write each student's scientific name on the classroom classification chart.

9. Explain that the next step is to create a research guide for our class.

E. Evaluation/Assessment

1. Class participation

2. Student's scientific names

Lesson 11: What is a Research Guide ?

A. Objectives

1. Content

a. Classification system

b. Taxonomy of humans & other animals

c. Research skills

2. Concept Objectives

a. Understand that systems are a collection of structures and processes that interact.

b. Observe and recognize the characteristics of an organism.

c. Develop an understanding about scientific inquiry.

3. Skill Objectives

a. Utilize the sequence of the classification system to understand an animal's structure.

b. Solve problems by observing, analyzing, using deduction & logical thinking and drawing conclusions.

c. Use research abilities in reading and writing.

B. Materials

1. Class Classification chart (Appendix G)

2. Research guide sheet (Appendix K)

3. Variety of research guides or examples of write ups in encyclopedias, animal almanacs, etc.

C. Vocabulary

D. Procedures

1. Pass out copies of research guides or copies of pages from one to share with small groups. Notice that they include the scientific names and information about that particular animal. Sometimes it includes the taxonomy as well.
2. Explain that we are going to create a guide book for our classroom. Make an overhead of Appendix K and go over the expectations. If you have examples from previous years share those.
3. Students use their name as the common name. Then write in their scientific name. They complete the taxonomy and can use the class chart if they need to.
4. Habitat is to explain the environment in which they live. This could include a home or neighborhood description.
5. Interesting facts are things about the student that makes them unique or qualities they may possess.
6. The illustration should be a self-portrait that displays their scientific name as well as any other information they have shared.
7. Collect, grade and compile the research sheets into a class book and publish.

E. Evaluation/Assessment

1. Research sheet; Appendix K; graded or scored with a rubric.

VI. CULMINATING ACTIVITY

Let's Create an Animal Research Guide.

A. Objectives

1. Content
 - a. Classification system
 - b. Taxonomy of humans & other animals
 - c. Research skills
2. Concept Objectives
 - a. Understand that systems are a collection of structures and processes that interact.
 - b. Observe and recognize the characteristics of an organism.
 - c. Develop an understanding about scientific inquiry.
3. Skill Objectives
 - a. Utilize the sequence of the classification system to understand an animal's structure.
 - b. Solve problems by observing, analyzing, using deduction & logical thinking and drawing conclusions.
 - c. Use research abilities in reading and writing.

B. Materials

1. Research guide sheet (Appendix K)
2. Variety of research sources, research guides, encyclopedias, animal almanacs, Facts on File, etc.
3. Field trip to local zoo, wildlife refuge, etc.

C. Vocabulary

D. Procedures

1. Explain that we will now use the same guide sheet to research other animals.

2. Plan a field experience if possible to select and view animals for future research. If not available have students select one or two animals of their interest to research. make sure there is a wide variety.
3. Use an overhead of Appendix K and go over the expectations. If you have examples from previous years share those.
4. Students use the common name and the look up and write in the scientific name. They then research and complete the taxonomy as well as they can (dependent on information available.). They should be able to at least list the kingdom, phylum, genus and species.
5. Habitat will require reading and drawing information about the environment in which their animal lives.
6. Interesting facts are things that the student discovers or any other unique qualities of the animal that they are researching.
7. The illustration should be clear and help reflect the animal's traits and abilities.
8. Collect, grade and compile the research sheets into a class book and publish.

E. Evaluation/Assessment

1. Research sheet; Appendix K; graded or scored with a rubric.

VI. HANDOUTS/WORKSHEETS

See attachments

VII. BIBLIOGRAPHY

Bouffard, Delores. Classification; Reproducible Pages. St.Louis, Missouri: Milliken Publishing Co., 1985, ISBN 0-88335-812-3.

Core Knowledge Sequence. Charlottesville, VA: Core Knowledge Foundation, 1997, ISBN 1-8905167-12-7.

Hirsch, Jr. E.D. What Your Fifth Grader Needs to Know, New York: Dell Publishing, 1993, ISBN 0-385-31464-7.

Zeman & Kelly, Everything You Need to Know About Science Homework. New York: Scholastic Refemce, 1994, ISBN 0-590-49357-4.

Mr. Biology's Bio Web Site; www.hiline.net/~siremba/html

Why Do We Classify ?

We classify things in order to organize them. If there were no method of classification in a library you would never find the book we wanted. When you go shopping at a grocery store you use their classification system to find fruit, bread or milk.

Look around your house and neighborhood for other examples of classification systems at work. List two and describe how the items are organized or classified.

Classification Example #1

How are the things classified ?

Classification Example #2

How are the things classified ?

Appendix B

The History of Classification

The Greek scholar Aristotle began the discussion of classifying living things. He used a simple classification system that grouped animals into two-legged and four-legged classes. Other scientists studied plants and animals. A British naturalist John Ray updated the method of naming and describing living organisms. So more detailed facts were recorded. But it was not until the 1700's that the modern classification system was developed.

During the 1700's a Swedish doctor and botanist (he studied plants) **Carlos Linnaeus** classified all the then known organisms into two large groups; the kingdom of plants & animals. His aim was to name all of the plants and animals known at that time. He started with the idea that the smallest unit was the **species** and that each species was nested into a higher group.



Kingdom
Phylum
Class
Order
Family
Genus
Species

The **Linnaean System** is still used by scientists all over the world. It has been expanded to include new and different living things as they are discovered or as more knowledge has been learned. In 1989 Robert Whittaker suggested that there are five kingdoms: plant, animal, fungi, protista, and moneran. New studies suggest that there is more kingdoms but most scientists use Whittaker's five kingdoms.

Taxonomy is the term for classification of plants and animals. It puts them in groups by their characteristics to show their relationship to one another and then names them. Taxonomy uses **Latin** to name all living things so scientists around the world will recognize it regardless of their own language. Every living thing has a **scientific name** that is recognized around the world. It is made up of two parts (like a first and last name) the first part is the creature's **genus** and the second it's **species**.

Similarities & Differences

When we classify we look for ways in which things are the same or different. In nature many things are different, yet often have things in common. Look at each pair shown below and write one way that they are similar and one way they are different. If you finish early go back and see if you can list more similarities and differences.



House cat

leopard

Similar _____



Frog

Salamander

Similar _____

Different _____



Panda Bear

Grizzly Bear

Similar _____

Different _____

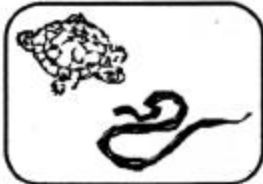


Goldfish

Shark

Similar _____

Different _____

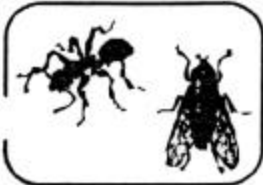


Snake

Turtle

Similar _____

Different _____



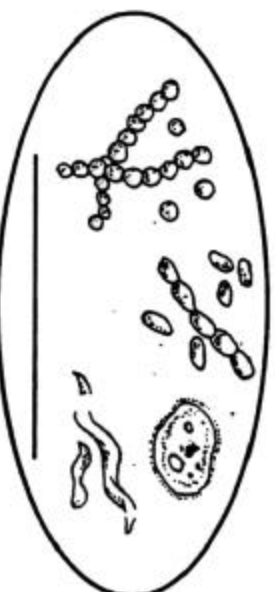
Ant

Fly

Similar _____

Different _____

The Five Kingdoms



Word Bank

Protist

Fungi

Moneran

Animal

Plant

Name _____

11/11/2020 1

The Five Kingdoms

Kingdom	Cell Structure	How do they get Energy ?	How do they Reproduce ?	Examples

Vertebrate or Not ?

Vertebrates are animals with spines or backbones. **Invertebrates** are animals without backbones.

Classify the animals shown below by writing it's name in the proper column

Invertebrates

1. _____
2. _____
3. _____
4. _____
5. _____

Vertebrates

1. _____
2. _____
3. _____
4. _____
5. _____



spider



owl



fish



leopard



frog



lobster



snake

snail



horse



ant



fly



Appendix G

Class Classification Chart (an example)

Kingdom: (Your school)	Hawthorne
Phyla: (grades at your school)	PreK, K, 1st, 2nd, 3rd, 4th, 5th (pick your grade)
Class: (Teacher's classes)	Mentzer, Reyes, Kiris (pick your class)
Order: (students pick)	1989, 1988 (year of birth)
Family: (students pick)	This can be several depending on groups i.e. favorite food, color of eyes or hair, months of birth Soccer , basketball, baseball
Genus: (students pick)	This can be several depending on groups i.e. favorite food, color of eyes or hair, months of birth Pizza , hamburgers, tacos
species: (students pick)	This can be several depending on groups i.e. favorite food, color of eyes or hair, months of birth Big Red , Coke, Pepsi, Sprite

Example of one student's taxonomy:

Hawthorne, 5th grade, Mentzer, 1989, Soccer, Pizza, Big Red

Scientific Name: Genus - Pizza
species - Big Red

SO: *Pizzadae big redicus*

Appendix H

The Five Classes of Vertebrates










	<i>Mammals</i>	<i>Reptiles</i>	<i>Amphibians</i>	<i>Birds</i>	<i>Fish</i>
Warm-blooded or Cold-blooded ?					
Habitat: Water, Air & Land ?					
Type of Body Covering ?					
How are they born ? Alive or hatched ?					
Feed Young with Milk ?					

Appendix I

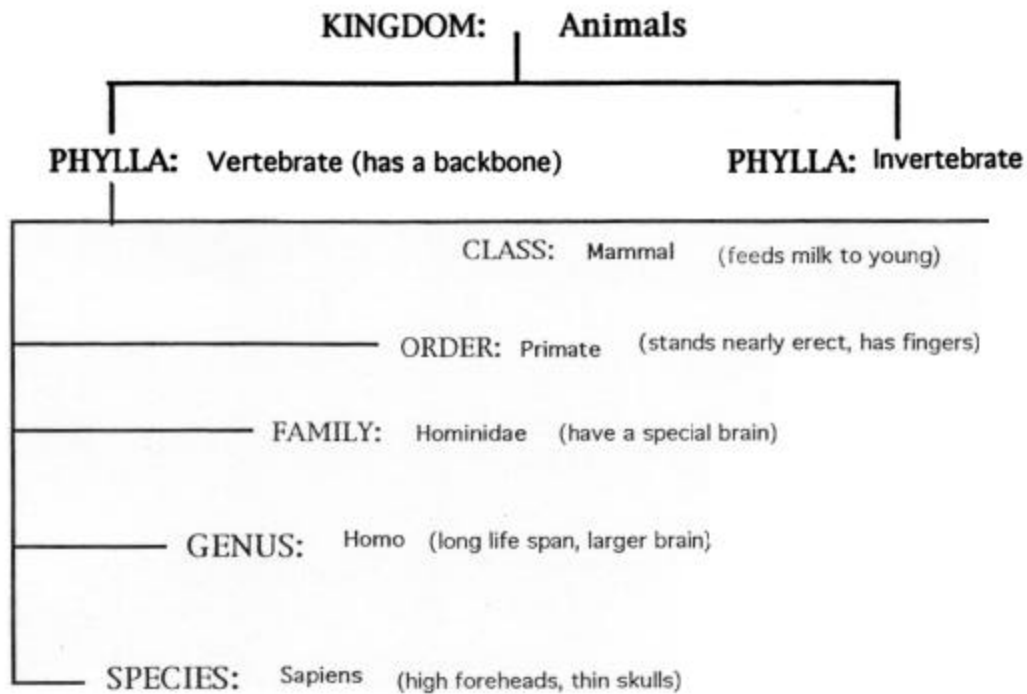
Name that Class !

Remember that vertebrates are divided into five classes: ***Mammals, Reptiles, Birds, Fish, and Amphibians***. Each class has a special set of characteristics.

Look at the pictures below and "Name that Class !" Write the class that the animal belongs to in the space below each picture.

Appendix J



Humans : Scientific Name: **Homo sapiens**

Genus Species

Taxonomy: **Animalia, Chordata, Mamalia, Primate, Hominidae, Homo, sapiens**

Humans are animals that have a backbone, nurse their young, stand nearly erect, possess fingers, have a special brain, live a long life, have larger brains with thin skulls and high foreheads.

Appendix K

COMMON NAME:

SCIENTIFIC NAME:

KINGDOM

PHYLLO:

CLASS:

ORDER:

FAMILY:

GENUS:

SPECIES:

INTERESTING FACTS

HABITAT

Researcher: